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Printed in U.S.A. Form # 81239 (10/03)

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DENTSPLY
PROFESSIONAL

Cavitron® Products

BOBCAT® Pro Ultrasonic Scaler
Installation and Service Manual

Please read carefully and completely before operating unit.

DENTSPLY
PROFESSIONAL

Cavitron®
BOBCAT® PRO

Please read carefully and completely before operating unit.

Introduction

Cavitron® BOBCAT® Pro Ultrasonic Scaler

DENTSPLY® Professional is an ISO13485 certified company. All products are CE registered. The Cavitron® BOBCAT® Pro Ultrasonic Scaler is classified by Underwriters Laboratories Inc. with respect to electric shock, fire, mechanical hazards only in accordance with UL 60601-1 and Can/CSA C22.2 NO. 601.1 assigned control #13VA. The Cavitron BOBCAT Pro Ultrasonic Scaler meets the EMC standards of EN 60601-1-2:2001 and FCC Part 18 that includes limits for radiated and conducted emissions, as well as requirements for immunity to electrostatic discharge, surges, power interruptions and electromagnetic interference.

The Ultrasonic Scaler operates by converting ordinary AC house current into high frequency current. The ultrasonic system consists of two parts: an insert and the electronic system. The system incorporates a closed loop for automatic tuning (operating frequency is adjusted to be at resonance for each insert). The Cavitron BOBCAT Pro Ultrasonic Scaler produces 25,000 microscopically small strokes per second at the insert's working tip. This combined with acoustic effects of the coolant water, produces a synergistic action that literally "powers away" the heaviest calculus deposits while providing operator and patient comfort.

Technical Support

There are no serviceable parts in this device. Refer all service to a qualified service repair facility. For technical support and repair assistance in the U.S., call Cavitron Care™ at 1-800-989-8826 or 717-767-8502 Monday through Friday, 8:00 A.M. to 5:00 P.M. (Eastern Time). For other areas,
contact your local DENTSPLY representative.

Supplies & Replacement Parts

To order supplies or replacement parts in the U.S., contact your local DENTSPLY Distributor or call 1-800-989-8826 or 717-767-8502 Monday through Friday, 8:00 A.M. to 5:00 P.M. (Eastern Time). For other areas, contact your local DENTSPLY representative.

Caution: U.S. Federal Law restricts this device to sale by or on the order of a Dentist.

Website: www.professional.dentsply.com

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Section 1: Indications

1.1 Ultrasonic Procedures

- All general supra and subgingival scaling applications.
- Periodontal debridement for all types of periodontal diseases.
- Endodontic procedures.

Section 2: Contraindications and Warnings

2.1 Contraindications

- Ultrasonic Scalers should not be used for restorative dental procedures involving the condensation of amalgam.
- For optimum performance use only inserts manufactured by DENTSPLY Professional.

2.2 Warnings

- Persons fitted with cardiac pacemakers, defibrillators and other active implanted medical devices, have been cautioned that some types of electronic equipment might interfere with the operation of the device. Although no instance of interference has ever been reported to DENTSPLY, we recommend that the handpiece and cables be kept at least 6 to 9 inches (15 to 23 cm) away from any device and their leads during use.

- There are a variety of pacemakers and other medically implanted devices on the market. Clinicians should contact the device manufacturer or the patient's physician for detailed information about the device.

Section 3: Precautions

3.1 Precautions for All Systems

- Do not place the ultrasonic scaler on or next to a radiator or other heat source. Excessive heat may damage the ultrasonic scaler's electronics. Place the ultrasonic scaler where air is free to circulate on all sides and beneath it. Do not cover vents on rear panel.
- The ultrasonic scaler is portable, but must be handled with care when moving.
- Equipment flushing and dental water supply system maintenance are strongly recommended. See Section 9: System Care.
- Close the water shut-off valve in the dental water supply system every night before leaving the office.
- The use of an in-line water filter is recommended.
- Never operate the ultrasonic scaler without water flowing through the handpiece.
- Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked "Hospital Only" or "Hospital Grade".

3.2 Precautions for Ultrasonic Prophylaxis Procedures

- Like a toothbrush, ultrasonic inserts "wear" with use. Inserts with just 2 mm of wear lose about 50% of their scaling efficiency. In general it is recommended that ultrasonic inserts be discarded and replaced after 90 days, under normal use, to maintain optimal efficiency and avoid breakage. A DENTSPLY Insert Efficiency Indicator is enclosed for your use.
- If excessive wear is noted, or the insert has been bent, reshaped or otherwise damaged, discard the insert immediately.
- Ultrasonic insert tips that have been bent, damaged, or reshaped are susceptible to in-use breakage and should be discarded and replaced immediately.
- Retract the lips, cheeks and tongue to prevent contact with the insert tip whenever it is placed in the patient's mouth.

Section 4: Infection Control

4.1 Infection Control Information Reference Booklet

For your convenience, an Infection Control Information reference booklet has been included with your Cavitron BOBCAT Pro Ultrasonic Scaler. Additional booklets can be obtained by calling Customer Service at 1-800-989-8826 or 1-717-767-8502 Monday through Friday, 8:00 A.M. to 5:00 P.M. (Eastern Time). For other areas, contact your local DENTSPLY representative.

4.2 General Infection Control Recommendations

- As with all dental procedures, the use of universal precautions (i.e., wearing a face mask, eyewear or face shield, gloves and protective gown) is recommended.
- For maximal operator and patient safety, carefully follow the Infection Control Information procedures detailed in the booklet accompanying your ultrasonic scaler.
- As with high-speed handpieces and other dental devices, the combination of water and ultrasonic vibration from your Cavitron BOBCAT Pro Ultrasonic Scaler will create aerosols. With proper technique, much of the aerosol dispersion can be effectively controlled and minimized. Please carefully follow the procedural guidelines in this manual regarding the use of your ultrasonic scaler.
- A 0.12% chlorhexidine pre-rinse (ORIS^{TM}) is recommended prior to starting any dental procedure.

4.3 Water Supply Recommendations

It is highly recommended that all dental water supply systems conform to applicable CDC (Centers for Disease Control and Prevention) and ADA (American Dental Association) standards, and that all recommendations be followed in terms of flushing, chemical flushing, and general infection control procedures. See Sections 5.2 and 9.

Section 5: Installation Instructions

5.1 General Information

If the installation of your Cavitron BOBCAT Pro Ultrasonic Scaler is performed by someone other than trained DENTSPLY Distributor personnel or DENTSPLY Service Technicians, care should be taken to observe the following requirements and recommendations.

5.2 Water Line Requirements

- The System's water supply line is factory installed. Do not disconnect it from the ultrasonic scaler.
- Incoming water supply line pressure to the ultrasonic scaler must be 25 psi (172 kPa) minimum to 60 psi (414 kPa) maximum. If your dental water system's supply line pressure is above 60 psi, install a water pressure regulator on the water supply line to your Cavitron BOBCAT Pro Ultrasonic Scaler.
- A manual shut-off valve on the dental water system supply line should be used so that the water can be completely shut-off when the office is unoccupied.
- A filter in the dental water system supply line is recommended so that any particles in the water supply will be trapped before reaching the ultrasonic scaler.
- After the above installations are completed on the dental water supply system, the dental office water line should be thoroughly flushed prior to connection to the ultrasonic system.
- After flushing system verify there are no leaks.

5.3 Electrical Requirements

Refer to Section 11: Specifications.

5.4 Unpacking the System

Carefully unpack your Cavitron BOBCAT Pro Ultrasonic Scaler and verify that all components and accessories are included:

1. Cavitron BOBCAT Pro Ultrasonic Scaler with factory installed water supply line, handpiece assembly and foot control assembly.
2. Detachable AC Power Cord set.
3. Efficiency Indicators for Cavitron Inserts.
4. Literature Packet.
5. Cavitron Ultrasonic Inserts (quantity optional).

5.5 System Installation

- The BOBCAT Pro is designed for both horizontal and vertical placement on a level surface.
- Be sure unit is stable and resting on four feet.
- Placing unit in direct sunlight may discolor plastic housing.

5.6 Rear Panel Controls

•The ON/OFF Control Switch is located on the Rear Panel of the Cavitron BOBCAT Pro Ultrasonic Scaler. The POWER INDICATOR is located on the Front Panel of the Cavitron BOBCAT Pro Ultrasonic Scaler. (See Section 6.1)

5.7 Power Cord/Power Connection

•Verify the ON/OFF Control Switch located on the rear panel of the ultrasonic scaler is in the OFF position before proceeding.

•Plug the detachable AC Cord into the back of the ultrasonic scaler and into an approved outlet.

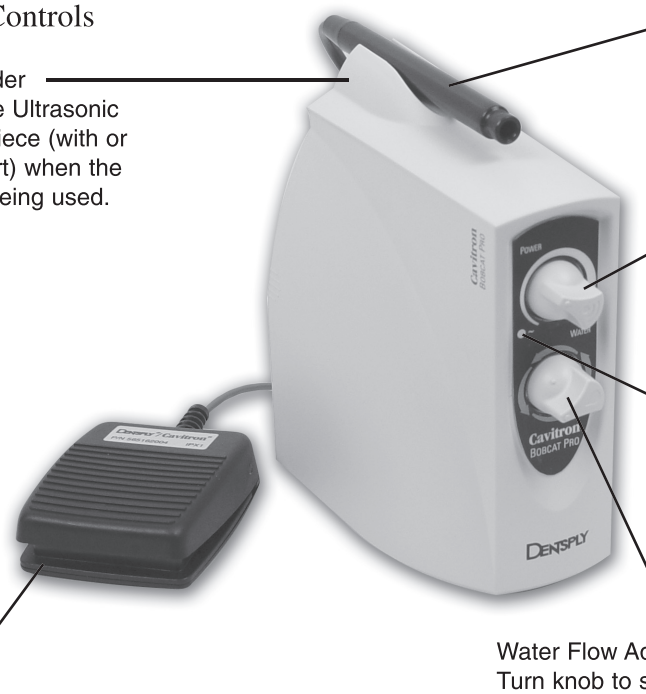
5.8 Water Supply Line Connection

•Connect the free end of the ultrasonic scaler's water supply line to the dental water supply line or a Cavitron DualSelect™ Dispensing System. If your ultrasonic scaler's water supply line is provided with a quick

disconnect, connect the quick disconnect to the dental water supply line or a Cavitron DualSelect Dispensing System.
•Inspect all connections to make certain there are no leaks.

Section 6: BOBCAT® Pro Ultrasonic Scaler Description

6.1 System Controls



Handpiece Holder
Safely holds the Ultrasonic Scaler's Handpiece (with or without an insert) when the System is not being used.

Handpiece
Holds all Cavitron 25K Ultrasonic Inserts and transmits energy from the ultrasonic scaler to the insert.

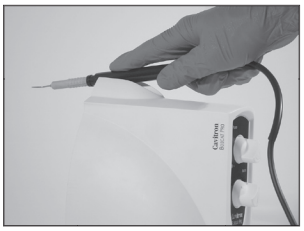
Power Control
Turn knob to select ultrasonic power level for operation. Clockwise increases power and counterclockwise decreases power.

Power Indicator Light
Illuminates when POWER ON/OFF Control Switch is ON.

Foot Control
See Section 6.5

Water Flow Adjustment
Turn knob to select water flow level for operation. Clockwise decreases water flow and counterclockwise increases water flow. The water flow rate through the Handpiece also determines the temperature of the coolant water. Low flow rates produce warmer water. High flow rates produce cooler water. With experience, you will be able to determine the best setting between the minimum and maximum flow rates for optimum operating efficiency and patient comfort.

6.2 Handpiece Holder



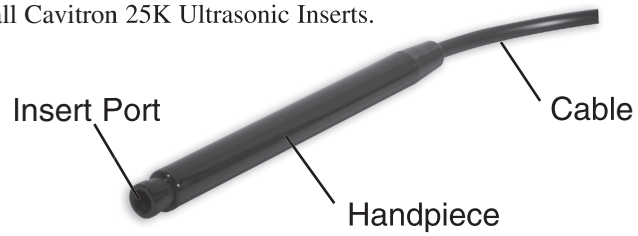
Vertical Orientation
Seat handpiece with a downward action as shown.

Horizontal Orientation
Squeeze handpiece into holder as shown.

6.3 Handpiece

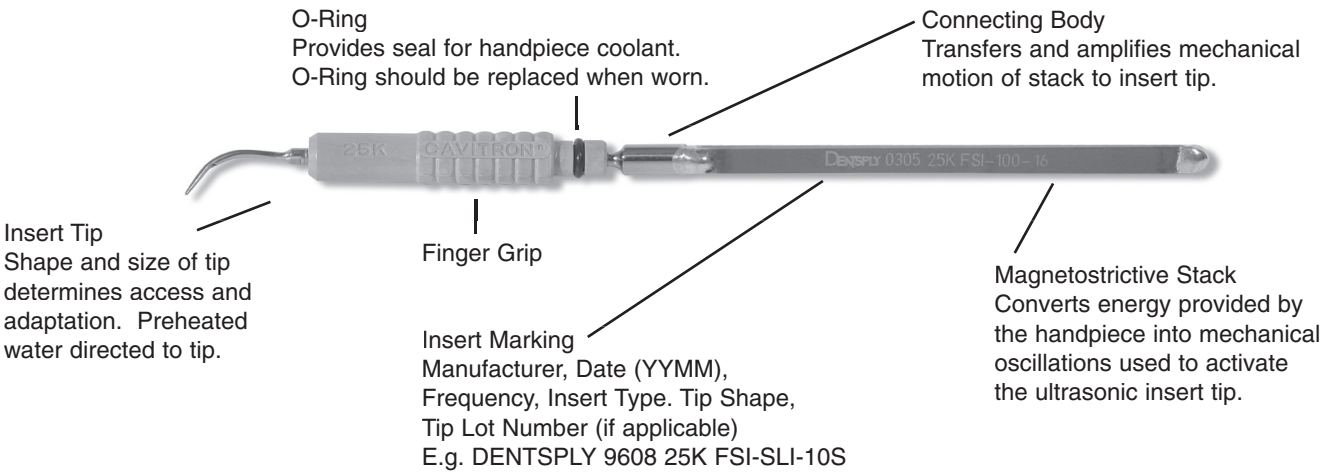
The Cavitron BOBCAT Pro Ultrasonic Scaler handpiece accepts all Cavitron 25K Ultrasonic Inserts.

Note: Handpiece does not detach from the cable.



6.4 Cavitron® 25K™ Ultrasonic Inserts

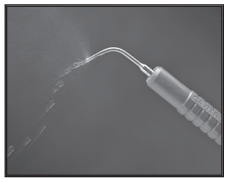
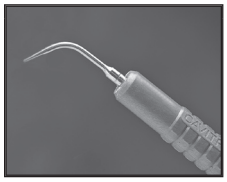
The many styles of Cavitron® 25K™ Inserts are easily interchangeable for various procedures and applications. See enclosed booklet for specific information.


O-Ring
Provides seal for handpiece coolant.
O-Ring should be replaced when worn.
Connecting Body
Transfers and amplifies mechanical motion of stack to insert tip.
Insert Tip
Shape and size of tip determines access and adaptation. Preheated water directed to tip.
Finger Grip
Insert Marking
Manufacturer, Date (YYMM), Frequency, Insert Type. Tip Shape, Tip Lot Number (if applicable)
E.g. DENTSPLY 9608 25K FSI-SLI-10S
Magnetostrictive Stack
Converts energy provided by the handpiece into mechanical oscillations used to activate the ultrasonic insert tip.

Hold the handpiece in an upright position. Activate the foot control to bleed with water any air bubbles that might be trapped inside the handpiece. Lubricate the rubber o-ring on the insert with water before placing it into the handpiece. Fully seat insert with a gentle push-twist motion. DO NOT FORCE.

6.5 Foot Control Information & Operation

The following operating characteristics apply when using your Cavitron BOBCAT Pro Ultrasonic Scaler with Cavitron Ultrasonic Scaling Inserts and the PEC-2 Endosonic Insert.

Foot Control depressed...	Foot Control released...
The ultrasonic insert tip is activated and irrigating water. 	Both ultrasonic activation and irrigating flow stop. 

NOTE: Water may drop from insert tip after deactivation of foot control from pressure in handpiece.

Section 7: Accessories

1. AC Power Cord set
2. Cavitron® Ultrasonic Inserts
3. Cavitron® DualSelect™ Dispensing system

For detailed information, contact your local DENTSPLY representative or authorized DENSTPLYdistributor.

Section 8: Techniques for Use

8.1 Patient Positioning

• For optimal access to both the upper and lower arches, the backrest of the chair should be adjusted to a 45˚ degree angle. This assures patient comfort and clinician visibility.

• Have the patient turn his/her head to the right or left. Also position chin up or down depending upon the quadrant and surface being treated. Evacuate irrigant using either a saliva ejector or High Volume Evacuator (HVE).

8.2 Performing Ultrasonic Scaling Procedures

• Note: Refer to the Infection Control Information Booklet supplied with your system for general procedures to be followed at the beginning of each day and between patients.
• The edges of Cavitron® Ultrasonic Inserts are intentionally rounded so there is little danger of tissue laceration with proper ultrasonic scaling technique. Whenever the insert tip is placed in the patient's mouth, the lips, cheek and tongue should be retracted to prevent accidental contact with the activated tip.
• Hold the empty handpiece in an upright position over a sink or drain. Activate the Foot Control until water exits.
• Lubricate the rubber o-ring on the insert with water before placing it into the handpiece. Fully seat insert with a gentle push-twist motion. DO NOT FORCE.
• Activate the System. Hold the handpiece over a sink or drain. (Check spray to verify fluid is reaching the working end of the insert tip). Adjust the Water Control knob to ensure adequate flow. Greater flow settings provide cooler irrigant.
• In general, it is suggested that a "feather-light touch" be used for ultrasonic scaling. The motion of the activated tip and acoustic effects of the water, in most cases, is adequate to remove even the most tenacious calculus.
• Periodically check the Cavitron Ultrasonic Insert for wear with the Cavitron Insert Efficiency Indicator.
• The use of a saliva ejector or High Volume Evacuator (HVE) is recommended during all procedures.
• Set the ultrasonic scaler's Power Control knob to the lowest effective power setting for the application and the selected insert.

8.3 Patient Comfort Considerations

Reasons for sensitivity

• Incorrect tip placement. The point should never be directed toward tooth root surfaces.
• Not keeping tip in motion on tooth. Do not allow the insert to remain in a static position on any one area of the tooth. Change the insert's path of motion.
• Applying excessive pressure. Use a very light grasp and pressure, with a soft tissue fulcrum whenever possible, especially on exposed cementum.
• If sensitivity persists, decrease power setting and/or move from the sensitive tooth to another and then return.

Section 9: System Care

9.1 Daily Maintenance

It is recommended that you perform the following maintenance procedures to help minimize bio-film formation in the water path of your Cavitron BOBCAT Pro Ultrasonic Scaler which could affect the water flow to the ultrasonic insert, and scaling performance.

Start-Up Procedures at the beginning of the day:

1. Open the manual shut-off valve on the dental office water supply system.
2. Turn the System ON using the ON/OFF control switch. (See illustration on page 5). Verify the Power Indicator Light is lit.
3. Set the Power Control knob to the minimum setting.
4. Set the Water Control knob to maximum.
5. Hold the Handpiece (without an insert installed) upright over a sink or drain. Activate the Foot Control and flush the water line for a least 2 minutes.
6. Place a sterilized insert into the Handpiece and set the Water Control knob and Power Control knob to your preferred operating position.

Between Patients:

1. Remove ultrasonic insert used, clean and sterilize.
2. Disinfect the surfaces of the cabinet, Power Cord, Handpiece and cable assembly, and Foot Control and cable assembly by applying an approved non-immersion type disinfectant solution* carefully following the instructions provided by the disinfectant solution manufacturer. To clean system, generously spray disinfectant solution on a clean towel and wipe all surfaces. Discard used towel. To disinfect system, generously spray disinfectant on a clean towel and wipe all surfaces. Allow disinfectant solution to air dry. Never spray disinfectant solution directly on the ultrasonic scaler.
3. Set the power to minimum and hold the handpiece over a sink or drain and flush the water line at maximum water flow for 30 seconds.
4. When ready, place a sterilized insert into the handpiece.

Shut-Down Procedures at the end of the day

1. Remove ultrasonic insert used, clean and sterilize.
2. Turn the System OFF.
3. Disinfect the surfaces of the cabinet, Power Cord, Handpiece and cable assembly, and Foot Control and cable assembly by applying an approved non-immersion type disinfectant solution* carefully following the instructions provided by the disinfectant solution manufacturer. To clean system, generously spray disinfectant solution on a clean towel and wipe all surfaces. Discard used towel. To disinfect system, generously spray disinfectant on a clean towel and wipe all surfaces. Allow disinfectant solution to air dry. Never spray disinfectant solution directly on the ultrasonic scaler.
4. Close the manual shut-off valve on the dental water supply system.

*NOTE: Water-based disinfectant solutions are preferred. Some alcohol-based disinfectant solutions may be harmful and may discolor plastic materials.

9.2 Weekly Maintenance

End of Week Procedures
(when connected to a DualSelect™ Dispensing System).

1. Follow the end of week procedures listed in the DualSelect™ Dispensing System manual.

Section 10: Specifications

Cavitron® BOBCAT® Pro: 115 VAC Systems

Electrical Voltage	115V Gen-130
Gen-130 (Model approved for U.S. application)	
Current	0.8 amps @ 115V (80VA)
Frequency	50/60 Hertz
Water Pressure	25-60 psig
Flow Rate	Minimum setting (CW) = 0 ml/min
	Maximum setting (CCW) > 60 ml/min
Weight	6 lb. (2.7 Kg)
Dimensions	Height: 8 in.
	Width: 3.8 in.
	Depth: 8 in.
	Handpiece Cable: 96 in.
	Foot Control Cable: 96 in.
	Power Cord: 96 in.
	Water Supply Line: 96 in.

Cavitron® BOBCAT® Pro: 220/230/240 VAC Systems

Electrical Voltage	220V Gen-130B
	230V Gen-130U
	240V Gen-130A, Gen-130E
Current	0.4 amps @ 220V/230V/240V (80VA)
Frequency	50/60 Hertz
Water Pressure	172-414 kPa
Flow Rate	Minimum setting (CW) = 0 ml/min
	Maximum setting (CCW) > 60 ml/min
Weight	2.7 kg
Dimensions	Height: 20.3 cm
	Width: 9.6 cm
	Depth: 20.3 cm
	Handpiece Cable: 2.4 m
	Foot Control Cable: 2.4 m
	Power Cord: 2.4 m
	Water Supply Line: 2.4 m

OPERATING ENVIRONMENT

Temperature	10 to 25 degrees Celsius
Relative Humidity	30 to 75 percent (non-condensing)

TRANSPORT AND STORAGE CONDITIONS

Temperature	0 to 70 degrees Celsius
Relative Humidity	10 to 95 percent (non-condensing)
Atmospheric Pressure	500 HPa to 1060 HPa

SYMBOLOGY

AC POWER

TYPE B APPLIED PART EQUIPMENT

PROTECTIVE EARTH (GROUND)

IPX1 Footswitch not for operating theatres
Protection Class- IPX1
IPX1 Classification of ingress of water

CLASSIFIED C UL US

MEDICAL EQUIPMENT
WITH RESPECT TO ELECTRIC SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH UL-2601-1/60601-1, CAN/CSA C22.2 NO.601.1
13VA

Refer to instruction manual for information

emc EUR · USA
The International EMC-Mark
Proof of product compliance
with EMC directive (89/336/EEC)

Section 11: Equipment Classifications

• Type of protection against electric shock:	Class 1
• Degree of protection against electric shock:	Type B
• Degree of protection against the harmful ingress of water:	Ordinary
• Mode of operation:	Continuous
• Degree of safety of application in the presence of a flammable anaesthetic mixture with air or with oxygen or nitrous oxide:	Equipment not suitable for use in the presence of flammable anaesthetic or oxygen.
• According to medical device directive:	IIA (rule 9)

Section 12: Disposal of Unit

• In accordance with local and state laws.

Section 13: Troubleshooting and Analysis

13.1 Troubleshooting and Analysis

Although service and repair of the Cavitron BOBCAT Pro Ultrasonic Scaler should be performed by DENTSPLY personnel, the following are some basic troubleshooting procedures that will help avoid unnecessary service calls. Generally, check all lines and connections to and from the ultrasonic scaler. A loose plug or connection will often create problems. Check the settings on the ultrasonic scaler's knobs.

13.2 Technical Support and Repairs

For technical support and assistance in the U.S. call 1-800-989-8826 or 717-767-8502 Monday through Friday, 8:00 A.M. to 5:00 P.M. (Eastern Time). For other areas, contact your local DENTSPLY representative.

Section 13: Troubleshooting and Analysis continued on page 12

SYMPTOMS	CAUSES	CORRECTIVE MEASURES
Cavitron® BOBCAT® Pro Ultrasonic Scaler does not power up: pilot light does not illuminate.	1. Faulty wall outlet	1. Check wall outlet and if faulty take necessary corrective measures.
	2. Damaged Power Cord.	2. Replace the power cord.
	3. Fuse F1 and/or F2 blown.	3. Replace fuses F1 and F2 with specified fuses.
	4. Damaged On/Off switch.	4. Replace On/Off switch.
No power to circuitry. Slo-Blo Fuses good.	1. Unit is installed in a confined area (such as a cabinet), or is too close to a heat source to ensure proper air circulation around unit.	1. Thermal cutout built into transformer opened. Replace transformer and provide adequate air circulation around unit.
Slo-Blo fuse F1 and/or F2 failed.	1. Short or failure in unit.	1. Unplug transformer secondary cable from the board at J4. A. Fuse blows. Check for short circuit in On/Off switch and/or transformer. B. Fuse okay. Check Ultrasonic PC board and/or Darlington transistor for short.
Low insert scaling power or insert stops vibrating when contacting tooth surface	1. Insert Malfunction.	1. Test with another Cavitron insert. If test insert works properly, discard the original insert.
	2. Insert is not pushed in far enough for automatic pick-up	2. Check if insert is fully seated in the handpiece.
	3. Darlington Thermistor activated due to over-heating condition.	3. BOBCAT® Pro unit was operated at high power setting without an insert installed in the handpiece for an extended period of time. Power off the unit and allow it to cool and reset.
	4. 30khz insert erroneously installed in handpiece.	4. BOBCAT® Pro unit is designed to operate with Cavitron® 25khz inserts.
Intermittent scaling power.	1. Malfunction in handpiece.	1. Unplug the Handpiece cable connector at J2 and check continuity of the wires. A. Connect ohmmeter between RED–GRN wire terminals. B. Connect ohmmeter between RED-WHT and GRN-WHT wire terminals. Flex the hand piece cable and check for intermittent readings. If ohmmeter reading is not consistent or not reading, handpiece and cable assembly is likely to be damaged and should be replaced.

Handpiece Terminal	*Nominal Resistance*
Red-Green	1 Ohm
Red-White	20 Ohms
Green-White	20 Ohms

SYMPTOMS	CAUSES	CORRECTIVE MEASURES
	2. Loose wiring or defective solder joint in unit wiring	2. Loose wiring or defective solder joint in unit wiring.
	3. Foot Control cable or pedal assembly has an intermittent connection.	3. Unplug the RED - BLK wires from the ultrasonic PC board and test for continuity and Foot Control operation. Flex the Foot Control cable near the pedal and back panel strain relief.
Handpiece heats up.	1. Insufficient water to cool handpiece.	1. Increase the setting on the lavage control until handpiece runs cool.
	2. Air trapped in the handpiece.	2. When the inserts are changed, hold the handpiece in an upright position until the trapped air is removed and the water flows properly.
Insufficient water from scaler handpiece. `	1. Low water pressure.	1. Measure water pressure at dental office. Adjust incoming source water pressure to specification.
	2. Water supply hose or handpiece tubing clogged.	2. Remove blue water hose from unit and flush. Remove and flush handpiece water tubing.
	3. Handpiece cable water tubing and wires twisted.	3. Remove restriction if possible or replace handpiece assembly.
No water flow.	1. High dental office water pressure.	1. Install a water pressure regulator on the main water supply line and reduce the pressure to 60 psi.
Water drips from the handpiece when not operating.	1. Water solenoid valve leaking due to trapped debris.	1. Repair or replace solenoid valve assembly. Plug the water supply hose into an air source to blow out the dirt. If the leak persists, replace the regulator/solenoid assembly.
Water spray from insert is not properly covering the operating area of the activated tip.	1. Improper water flow adjustment.	1. Refer to DENTSPLY® Cavitron® "BOBCAT® Pro Ultrasonic Scaler- Directions For Use" for instructions on water flow adjustment.
	2. Insert is partially clogged. P-style insert water tube incorrectly aimed.	2. Use small smooth pliers, re-position the water tube and direct the spray at the back of the insert tip.
Water leak from the handpiece while in operation.	1. O-ring worn on insert.	1. Replace the o-ring.
	2. Water leak in plastic water line at handpiece or inside the handpiece assembly.	2. Replace the handpiece and cable assembly.
Insert vibrates but no water, or insufficient water volume, flows from the handpiece.	1. Faulty water supplied to unit.	1. Check the water supply line to the unit and take necessary action to insure specified pressure.

SYMPTOMS	CAUSES	CORRECTIVE MEASURES
	2. Damaged water needle valve.	2. Replace the water needle valve assembly.
	3. Obstruction or mineral deposits in the water system in the unit	3a. Remove the insert and turn the water valve full open. Observe the water flow. If the flow is good, then the obstruction is in the insert. 3b. If the obstruction is not in the insert, then remove the handpiece water line at solenoid and check the water flow. If flow is good, then the obstruction is in handpiece supply line. Replace the handpiece and cable assembly.
	4. Faulty Solenoid.	4. Replace the water solenoid assembly.
Water flow not controllable by turning the water adjustment knob.	1. Malfunction of water needle valve.	1. Replace the water solenoid assembly.
Continuous clicking or no click when stepping on the foot control.	1. Damaged foot control assembly.	1. Check foot control by disconnecting it at the PC board and checking its operation with an ohm-meter. If defective, repair or replace.
Inserts cannot be installed in the handpiece properly.	1. O-ring on the insert is dry.	1. Lubricate the o-ring with water. If the o-ring is worn, replace it.
	2. Incorrect O-ring installed on the insert.	2. Replace the insert O-ring with Cavitron O-rings. O-rings are available in packs of 12. Green P/N 62605, Black P/N 62351

Section 14: Disassembly and Service Procedures

14.1 Cabinet Housing Removal

1. Power off the Bobcat Pro Scaler using the rear rocker switch.
2. Unplug the Power Cord from the rear receptacle.
3. Disconnect the water supply by unplugging the quick disconnect at the supply. Depress the tip of the quick disconnect in a suitable container to relieve the water pressure.
4. Place the Bobcat Pro Scaler in the horizontal position. Use a 3/32 inch Hex driver and remove the two (2) button head cap screws adjacent to the rear clear bumpers.
5. Use a 3/32 inch Hex driver and remove the two (2) screws on the Back Panel. Slide the back panel away from the molded housing and place it to the right of the Scaler.
6. Use a magnetic Torx driver and remove the two #8 x 1/2" Hi-Lo Torx screws located inside the cabinet housing above the power potentiometer. Remove the screws completely.
7. Grasp the exposed chassis above the water solenoid and pull it straight back away from the molded housing. The two front panel knobs will disengage from the shafts.

14.2 Fuse Replacement

1. Power off the Bobcat Pro Scaler using the rear rocker switch.
2. Unplug the Power Cord from the rear receptacle.
3. Use a 3/32" Hex Driver and remove the two (2) button head cap screws on the back panel. Slide the back panel away from the molded housing and place it to the right of the Scaler.
4. The fuses are located on the Power Cord receptacle module. Use a small flat blade screwdriver and lift the fuses from the clips. Ensure not to spread apart or deform the fuse holder clips.
5. Replace the fuses with the specified current rating and voltage.
6. Return the Back Panel to the Scaler unit.
   A. Ensure the ground wire and Power switch wires are routed to prevent damage.
   B. Also check that the Handpiece and Foot Control cables are not trapped by the rear panel.
   C. The Back Panel should be fully surrounded by the molded cabinet housing.
7. Use a 3/32" Hex driver and secure the Back Panel using the two button head cap screws.

14.3 Foot Control Assembly Replacement

1. Follow the steps above in Section 14.1 for "Cabinet Housing Removal".
2. Cut the two plastic wire ties at the transformer lug and ground lug terminal.
3. Unplug the Foot Control wire terminals at the Ultrasonic PC board J5 (FS1 & FS2) and the ground lug at the chassis ground terminal.
4. Use a Heyco No. 29 Strain Relief Tool to extract the strain relief and old Foot Control cable from the Back Panel. Remove the strain relief for reuse on the replacement Foot Control cable.
5. Insert the replacement Foot Control cable through the hole in the chassis.
6. Guide the Foot Control cable under the transformer lower mounting bolts, up behind the 24 VAC leads and between the Plastic Shield and transformer.
7. Twist the black and red Foot Control wires together, 2-3 turns. Attach the long Black Wire to the FS1 PC board terminal and the Red wire to the FS2 terminal.
8. Attach the shorter Ground Shield wire terminal to the Fast-On tab. **Caution:** Route the gray Foot Control cable shield and ground wire below the metal chassis - to prevent it from coming in contact with the PC board.
9. Allow enough slack in the cable. Place the strain relief around the Foot Control cable with the closing tab positioned upward.
10. Secure the Foot Control cable with two new cable ties where the original ones were removed.
11. Use the Heyco Strain Relief tool to insert the secure the strain relief. Pull on the Foot Control cable to verify a secure fit.
12. Slide the chassis into the molded housing and secure with the two #8 X 1/2" Hi-Lo Torx screws above the potentiometer.
13. Fasten the chassis to the cabinet housing with two #8-32 X 3/8" button head cap screws using a 3/32" Hex driver.

CHASSIS INSTALLATION WITH ALIGNMENT TOOL:

If the chassis alignment tool is available, screw it onto the water needle valve threaded shaft before sliding the chassis into the housing. Fasten the chassis to the housing with the two Hi-Lo screws and the two button head cap screws before removing the alignment tool.

CHASSIS INSTALLATION WITHOUT ALIGNMENT TOOL: Slide the chassis into the housing. Install but do not tighten the two Hi-Lo screws above the potentiometer and the two button head cap screws at the rear edge of the housing. Gently push the water Needle valve shaft until it is exactly centered in the cabinet housing opening. Tighten the four screws. Confirm the position of the needle valve shaft in the housing.

14. Return the Back Panel to the Scaler unit.
    A. Ensure the ground wire and Power switch wires are routed to prevent damage.
    B. Also check that the Handpiece and Foot Control cables are not trapped by the Back Panel.
    C. The Back Panel should be fully surrounded by the molded cabinet housing.
15. Fasten the Back Panel to the chassis with the #8-32 X 3/8" button head cap screws using a 3/32" Hex driver.
16. Install the Power and Lavage knobs. The knobs are not interchangeable. Be sure to turn the Needle Valve control shaft fully clockwise, by hand, before installing the Lavage Knob. The Power knob pointer rotation must match the scale on the cabinet housing.

14.4 Handpiece Assembly Replacement

1. If possible, plug the water supply hose into a compressed air source (60 psi max.) and operate the Scaler to discharge all water in the scaler and handpiece. Adjust the Power knob to minimum (ccw.) and the Lavage knob to full maximum (ccw.) flow.
2. Follow the steps above in Section 14.1 for "Cabinet Housing Removal".

3. Unplug the 3-wire Handpiece cable from J2 on the Ultrasonic PC board. Cut the plastic cable tie.
4. Disengage the strain relief by sliding it from the chassis.
5. Use a 9/16 inch open-end or deep socket wrench and loosen the brass nut on the Lavage Needle Valve. Rotate the valve counter-clockwise to allow easier access to the clear HP water tubing in the chassis opening.
6. Detach the clear tubing from the barbed fitting. Remove the old HP cable and tubing.
7. Insert the clear water tubing from the replacement HP into the black tubing. Use smooth long nose pliers to locate the tubing. The tubing should not be looped around black supply needle valve tubing.
8. Insert the 3-wire cable through the opening above the water solenoid and plug the connector to J2. Slide the strain relief into the chassis opening. Use a plastic cable tie and secure the water solenoid wires and HP cable to the PC board support.
9. Do NOT cut off the excess clear tubing. Instead, form 2-3 gradual loops and attach the end of the tubing to the needle valve barbed fitting. Use emery cloth to grip the tubing and slide it completely over the barbed fitting. Exercise caution to avoid puncturing the tubing. Be sure the clear tubing is not pinched by the plastic barrier and has free movement.
10. Rotate the Needle Valve back to its original position by directing the HP barbed fitting downward and tighten. Tighten to 25 in-lbs. Position the excess handpiece water tubing in the area behind the Needle valve by forming two loops. Do not tie or tangle the tubing. The tubing must be free moving.
11. Temporarily slide the Back Panel against the chassis and secure it to the chassis by installing the upper screw. Connect the water and AC power cord. Power up the unit, install an insert in the handpiece, and check the scaling power and water flow.
12. Follow the currently approved test procedure and calibrate the scaler. Unplug the power cord and water supply hose.
13. Remove the Back Panel, check for leaks, and re-install the chassis into the cabinet housing. Secure the two cabinet screws above the Power Potentiometer and the two screws adjacent to the clear bumpers. Inspect the Back Panel ground wire and Power Switch cable. Install the Back Panel and secure with two #8-32 X 3/8" Button Head Cap screws using a 3/32" Hex driver.
14. Install the Power and Lavage knobs. The knobs are not interchangeable. The Power knob pointer rotation must match the scale on the cabinet housing. Reconnect the scaler and check proper operation.

14.5 Power Transformer Replacement

1. Follow the steps in Section 14.1 for "Cabinet Housing Removal".
2. Carefully unplug the four (4) wire terminals from the transformer lugs. The two gray wires are connected to the secondary side of the transformer.
3. Using a 11/32 inch nut driver, remove the two nuts located at the bottom of the transformer. Slide out the two machine screws and remove the transformer.
4. Transfer the two machine screws and nuts from the malfunctioning transformer frame to the replacement transformer. Slide the transformer into position. Position the replacement transformer with the primary terminals to the left (towards the Back Panel) and the 24 volt secondary terminals on the right. The machine screws should be inserted through the top two holes from the front (terminal side) of the transformer. Tighten the Keps nuts to 25 ± 2 in. lbs.
5. Place the transformer between the two mounting tabs in the chassis. Insert the two machine screws from the back of the transformer. Check for trapped wires or tubing. Install the two Keps nuts and tighten to 25 ± 2 in. lbs.
6. The transformer terminal lugs are fragile. Gently reconnect the secondary terminal lugs. The primary terminals should be installed on the taps matching the Bobcat Pro scaler voltage specified on the Back Panel. The white wire must be connected to the "0" terminal lug.
7. Slide the chassis into the molded housing and secure with the two #8 x 1/2" Hi-Lo Torx screws above the potentiometer.
8. Fasten the chassis to the cabinet housing with two #8-32 X 3/8" button head cap screws using a 3/32" Hex driver.
9. Return the Back Panel to the Scaler unit.
   A. Ensure the ground wire and Power switch wires are routed to prevent damage.
   B. Also check that the Handpiece and Foot Control cables are not trapped by the Back Panel.
   C. The Back Panel should be fully surrounded by the molded cabinet housing.
10. Use a 3/32" Hex driver and secure the back panel with two #8-32 X 3/8" Button Head Cap screws.
11. Install the Power and Lavage knobs. The knobs are not interchangeable. The Power knob pointer rotation must match the scale on the cabinet housing.

14.6 Water Solenoid Replacement

1. Follow the steps in Section 14.1 above for "Cabinet Housing Removal".

2. Relieve the water pressure by pressing the quick disconnect tip in a suitable container. Disconnect the blue water hose from the solenoid by unscrewing the hose nut.
3. Use a #2 Phillips screwdriver and remove the solenoid screws.
4. Using a 11/32 inch nut driver, remove the two nuts and screws from the bottom of the transformer. Slide out the two machine screws and remove the transformer. Without removing the transformer wire lugs, rotate the transformer and place it over the top of the chassis.
5. Using thin-pointed scissors or wire cutters, cut the opaque shrink tubing that covers the water tubing and solenoid barbed fitting. Unplug the blue water tubing from the malfunctioning solenoid. Discard the shrink tubing and trim 1/8" off the end of the blue water tubing. Install a $1^1/_2$" piece of clear Heat Shrink tubing (P/N 625076002) over the end of the tubing.
6. Install the blue tubing on the solenoid barbed fitting. The tubing should be fully seated on the barb fitting. Slide the clear Heat Shrink tubing up over the solenoid fitting. Use a low-volume concentrated heat gun to shrink the clear tubing. Gradually heat all sides of the tubing. Start from the center and move toward the Solenoid Valve fitting. This will ensure that the tubing is centered and prevent movement and shrinkage away from the barb fitting. Do not melt or burn the black sleeve or blue tubing during the process. Route the water tubing under the plastic barrier into the notch provided and behind the transformer mounting tabs.
7. Position the solenoid on the chassis and secure with hardware. The solenoid wires should be positioned 90° to the solenoid fittings or straight up. If the wires are not properly positioned, loosen the solenoid stem nut and rotate the coil, then re-tighten.
8. Re-install the transformer. Tighten the screws securely and check the Foot Switch wire routing.
9. Plug the Solenoid Wire connector into J1 on the Ultrasonic PC board. Tie the solenoid wire and Handpiece cable to the PC board support.
10. Insert the blue water hose and hose nut through the lower left-hand hole in the Back panel. Connect the hose to the Solenoid fitting and tighten.
11. Temporarily fasten the Back Panel to the chassis using the upper screw. Connect the Bobcat Pro scaler to the water and power supply. Inspect the solenoid for proper operation and water leaks. If no leaks are detected, disconnect the power cord and unscrew the Back Panel.
12. Slide the chassis into the molded housing and secure with the two screws above the potentiometer.
13. Fasten the chassis to the cabinet housing with two #8-32 X 3/8" button head cap screws using a 3/32" Hex driver.
14. Return the Back Panel to the Scaler unit.
    A. Ensure the ground wire and Power switch wires are routed to prevent damage.
    B. Also check that the Handpiece and Foot Control cables are not trapped by the Back Panel.
    C. The Back Panel should be fully surrounded by the molded cabinet housing.
15. Fasten the Back Panel to the chassis with two #8-32 X 3/8" button head cap screws using a 3/32" Hex driver.
16. Install the Power and Lavage knobs. The knobs are not interchangeable. The Power knob pointer rotation must match the scale on the cabinet housing.
17. Rotate the water Needle Valve control shaft fully closed (cw). Install and fully seat the Lavage Knob on the shaft.

14.7 Lavage Needle Valve Replacement

1. Remove the 9/16" brass locking nut and lock washer.
2. Rotate the Needle Valve so the blue water tubing is upward and the clear tubing Is facing downward.
3. Push the Needle Valve back into the Chassis and lift up to remove the Needle valve. Pull off the clear handpiece water tubing.
4. Pull off and remove the opaque shrink tubing that covers the water tubing and Needle Valve barbed fitting. Unplug the blue water tubing from the malfunctioning Needle Valve. Discard the shrink tubing and trim 1/8" off the end of the blue water tubing. Install a $1^1/_4$" piece of clear Heat Shrink tubing (P/N 625076001) over the end of the tubing.
5. Install the blue tubing on the Needle Valve barbed fitting. The tubing should be fully seated on the barb fitting. Slide the clear Heat Shrink tubing up over the Needle valve fitting. Use a low-volume concentrated heat gun to shrink the clear tubing. Gradually heat all sides of the tubing. Start from the center and move toward the Needle Valve fitting. This will ensure that the tube is centered and prevent movement and shrinkage away from the barbed fitting. Do not melt or burn the black sleeve or blue tubing during the process. Route the water tubing under the plastic barrier into the notch provided and behind the transformer mounting tabs. Position the excess handpiece water tubing in the area behind the Needle valve by forming two loops. Do not tie or tangle the tubing. The tubing must be free moving.
6. Screw the brass hex nut fully onto the Needle Valve and install the lockwasher. Angle the Needle Valve assembly and position it into the mounting hole. Install the second lockwasher and fasten the assembly with a hex nut. Check Needle Valve orientation before tightening the nut.
7. Temporarily fasten the Back Panel to the chassis using

the upper screw. Connect the Bobcat Pro Scaler to the water and power supply. Inspect the solenoid for proper operation and water leaks. If no leaks are detected, disconnect the power cord and unscrew the Back Panel.

8. Slide the chassis into the molded housing and secure with the two screws above the potentiometer.
9. Fasten the chassis to the cabinet housing with two #8-32 X 3/8" button head cap screws using a 3/32" Hex driver.
10. Return the Back Panel to the Scaler unit.
    A. Ensure the ground wire and Power switch wires are routed to prevent damage.
    B. Also check that the Handpiece and Foot Control cables are not trapped by the Back Panel.
    C. The Back Panel should be fully surrounded by the molded cabinet housing.
11. Fasten the Back Panel to the chassis with two #8-32 X 3/8" button head cap screws using a 3/32" Hex driver.
12. Install the Power and Lavage knobs. The knobs are not interchangeable. The Power knob pointer rotation must match the scale on the cabinet housing.

14.8 Darlington Transistor Replacement

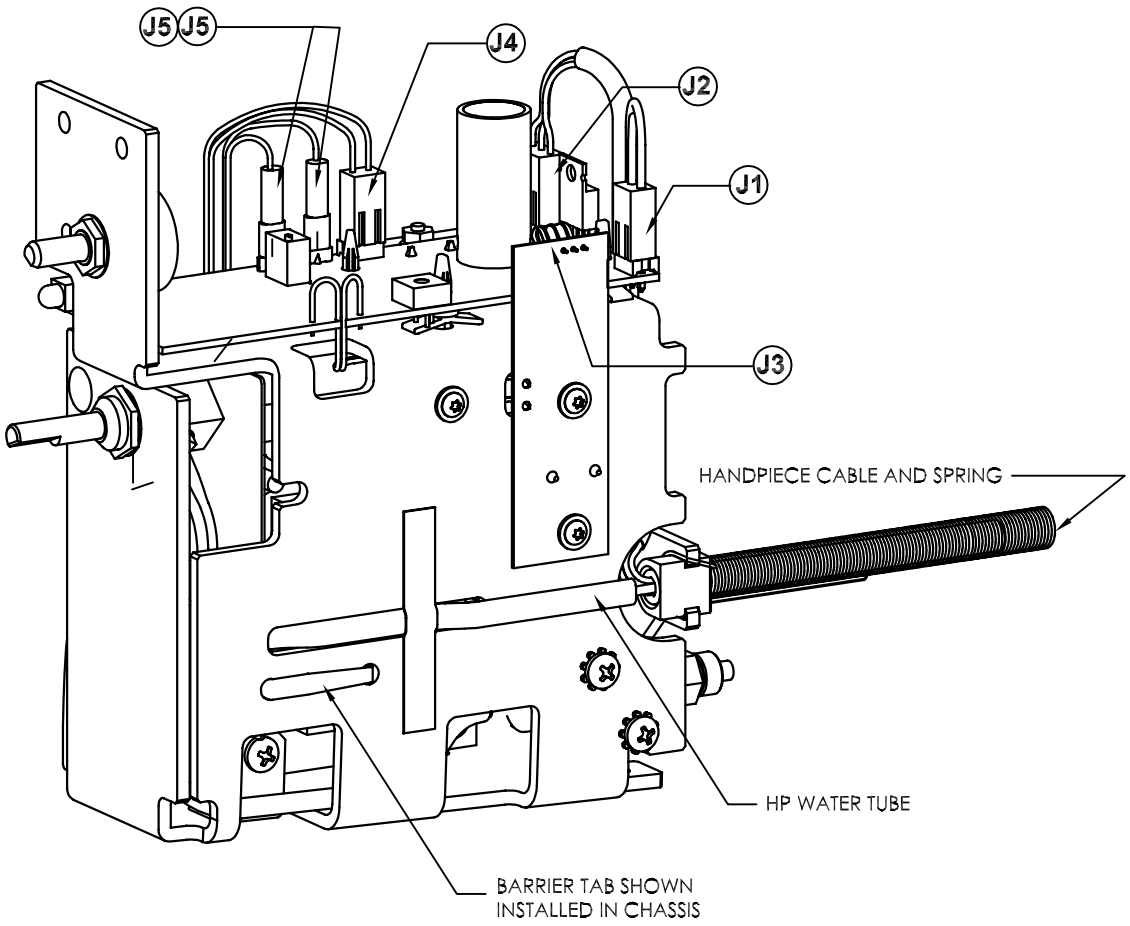
1. Follow the steps above in Section 14.1 for "Cabinet Housing Removal".
2. Use a T10 Torx driver and a 1/4 inch Nut driver to remove the hardware on the Darlington Transistor. Use a solder extractor or solder wick to unsolder the leads of the Darlington Transistor. Remove the transistor. The insulating pad must be replaced when installing a replacement transistor.
3. Insert the Darlington transistor mounting screws with flat washers through the Darlington Mount PC board and the Power Transistor insulator. The insulator is located between the Darlington Mount PC board and metal chassis. Place the transistor insulating Sil-pad over the screws by matching up the holes to the chassis. Align and position the replacement Darlington transistor over the two mount screws and the PC board. Install the Thermistor, a lockwasher and secure them with a nut. Position the Thermistor with its leads upward. Before tightening the hardware, check the alignment of the insulating pad and transistor leads. Tighten the transistor hardware using a T10 Torx driver and a 1/4" inch Nut driver to 8 ± 1 in. lbs.
4. Solder the transistor leads to the Darlington Mount PC board. Use approved soldering techniques to create a high quality connection. Cut off the excess transistor lead just beyond the solder joint.
5. Temporarily slide the Back Panel against the chassis and secure it to the chassis by installing the upper screw. Connect the water and AC power cord. Power up the unit, install an insert in the handpiece, and check the scaling power and water flow.
6. Follow the currently approved test procedure and calibrate the scaler. Unplug the power cord and water supply hose.
7. Remove the Back Panel and re-install the chassis into the cabinet housing. Secure the two cabinet screws above the Power Potentiometer and the two screws adjacent to the clear bumpers. Inspect the Back Panel ground wire and Power Switch cable. Install the Back Panel and secure using two 3/32 inch screws.
8. Install the Power and Lavage knobs. The knobs are not interchangeable. The Power knob pointer rotation must match the scale on the cabinet housing. Reconnect the scaler and check proper operation.

14.9 Ultrasonic PC Board Replacement

1. Follow the steps above in Section 14.1 for "Cabinet Housing Removal".
2. Unplug the 24 VAC connector (J4), Foot Control connectors (J5 & J5), Water Solenoid connector (J1) and Handpiece Connector (J2) from the Ultrasonic PC board.
3. Unsolder the 3-wire flexible jumper from the Darlington mount board.
4. Use a 7/16 inch deep socket to remove the nut on the Power Potentiometer.
5. Use a T10 Torx driver and a 1/4 inch Nut driver to remove the hardware on the upper Darlington Transistor mounting screw. Remove the Thermistor.
6. Use a 1/4 inch Nut driver and remove the hardware on the Bridge Rectifier.
7. Using long nose pliers, compress the tabs on the PC board supports and simultaneously lift the board.
8. Unsolder and transfer the Bridge Rectifier to the replacement Ultrasonic PC board or replace it. Do not solder four leads to the rectifier at this time. Apply a thin coating of thermal grease to the bottom of the rectifier.
9. Install one flat washer over the shaft and insert the Power potentiometer through the front panel. Align the PC board over the three (3) circuit board supports and press down uniformly. Install the second flat washer and hex nut on the potentiometer. Use a 7/16" wrench and tighten the nut to 15-20 in. lbs.
10. Inspect the rectifier leads for correct installation and secure it with the removed hardware. Torque to 8 ± 1 in. lbs. Solder the four rectifier leads.
11. Insert the leads of the flexible jumper into the Darlington mount board and solder.

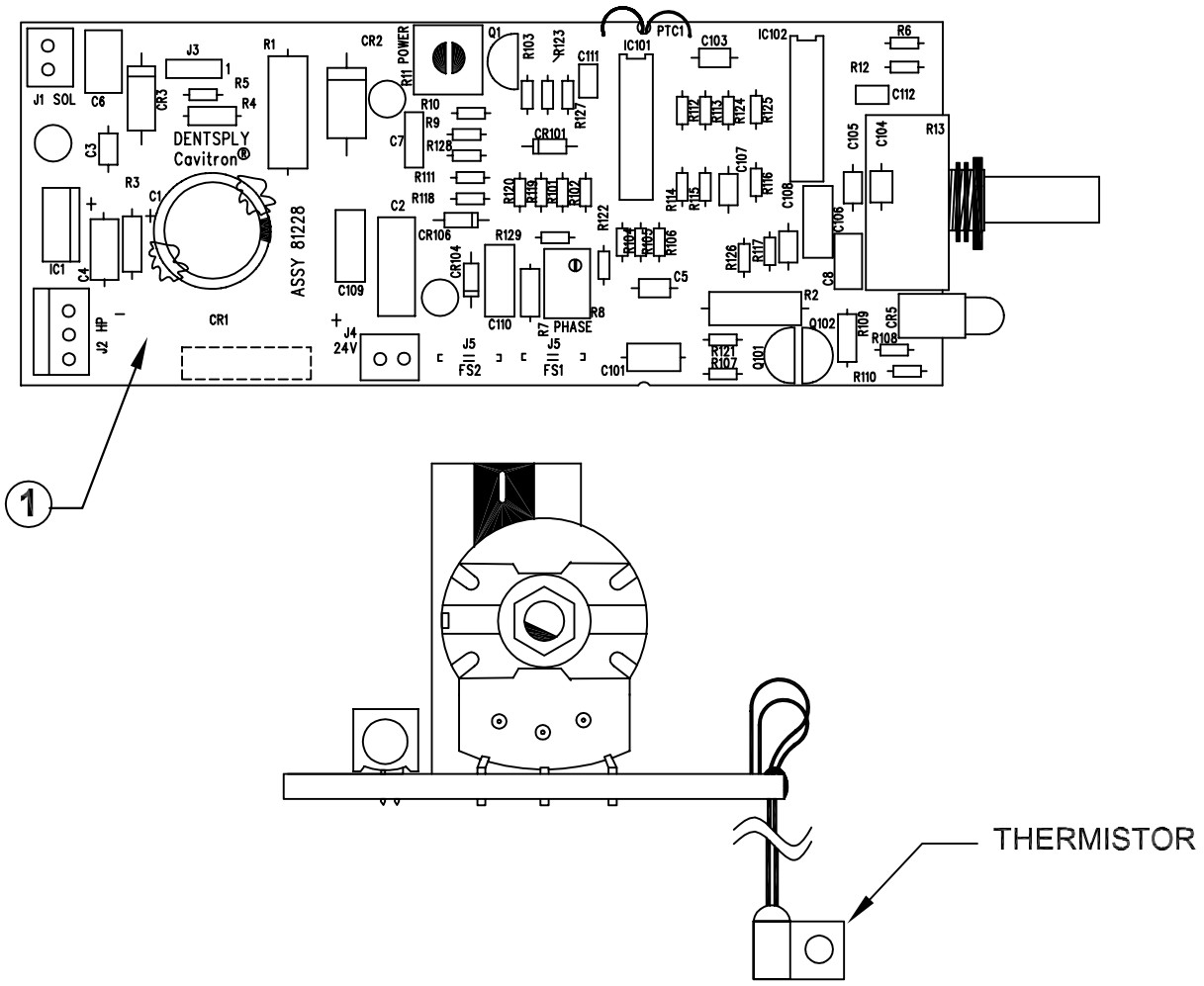
12. Reinstall the upper Darlington transistor hardware. Use a T10 Torx driver and a 1/4" inch Nut driver and torque to 8 ± 1 in. lbs. Route the Thermistor wires in the PC board cut-out and secure with RTV.
13. Reinstall the connectors for the solenoid, handpiece, foot control and AC power.
14. Temporarily slide the Back Panel against the chassis and secure it to the chassis by installing the upper screw. Connect the water and AC power cord. Power up the unit, install an insert in the handpiece, and check the scaling power and water flow.
15. Follow the currently approved test procedure and calibrate the scaler. Unplug the power cord and water supply hose.
16. Remove the Back Panel, secure all wires and re-install the chassis into the cabinet housing. Secure the two cabinet screws above the Power Potentiometer and the two screws adjacent to the clear bumpers. Inspect the Back Panel ground wire and Power Switch cable. Install the Back Panel and secure using two 3/32 inch screws.
17. Install the Power and Lavage knobs. The knobs are not interchangeable. The Power knob pointer rotation must match the scale on the cabinet housing. Reconnect the scaler and check proper operation.

Section 15: Replacement Parts



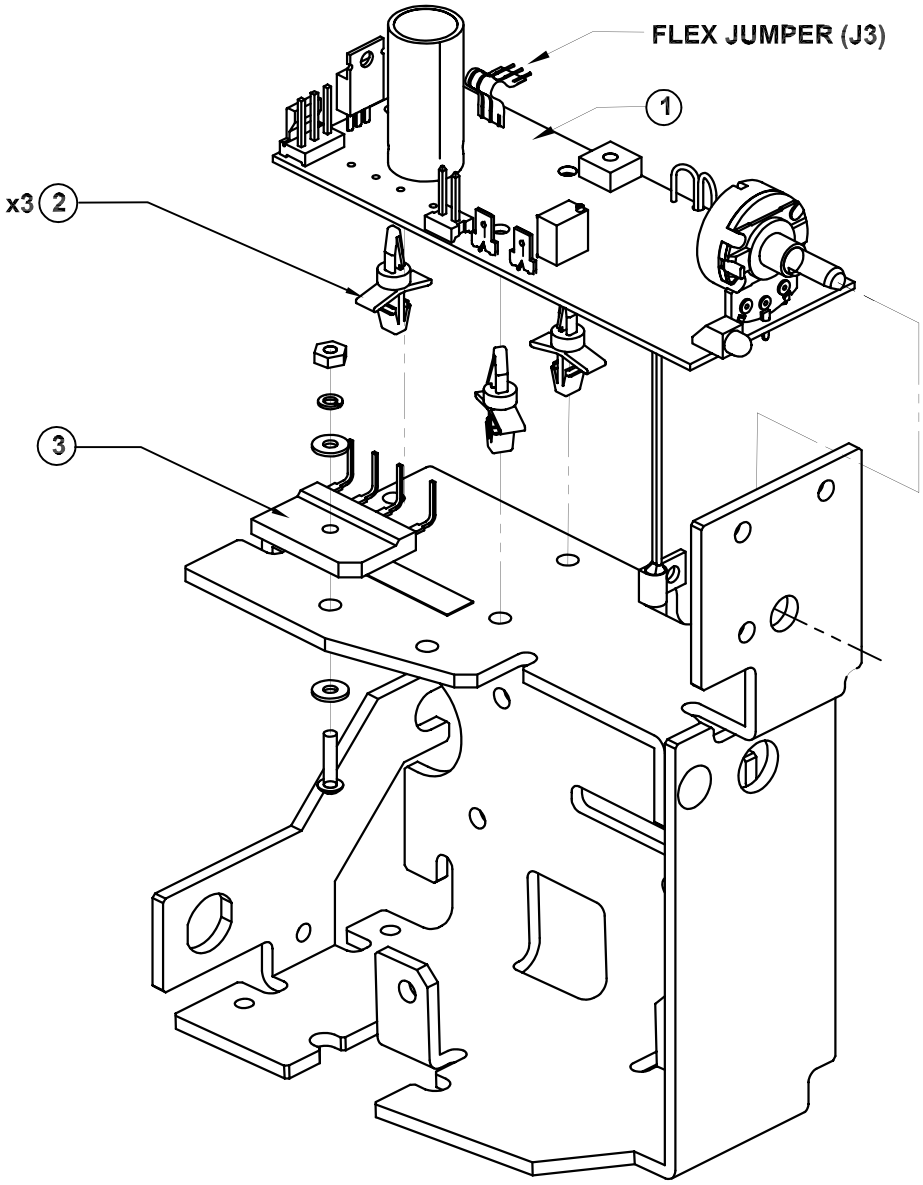
Connector Locations

PC BOARD CONNECTOR		COMPONENT DESCRIPTION
J5	FS1-Black	Foot Control
J5	FS2-Red	
J4	24V	24 Volts AC-Transformer
J2	HP	Handpiece
J1	SOL	Water Solenoid
J3		Darlington PCB 3-Wire Jumper



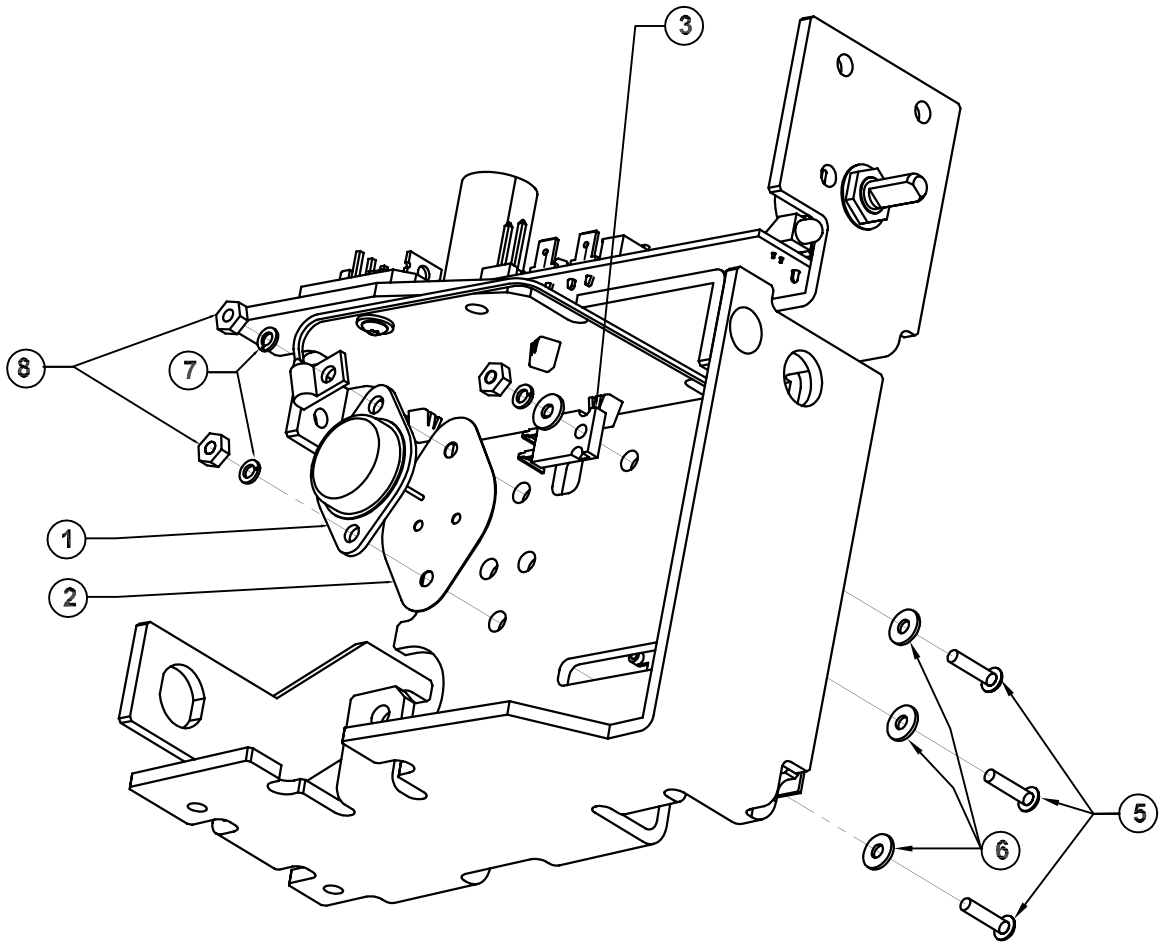
Oscillator Module PC Board Assembly

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	81228	OSCILLATOR MODULE PC BOARD ASSEMBLY, with thermistor



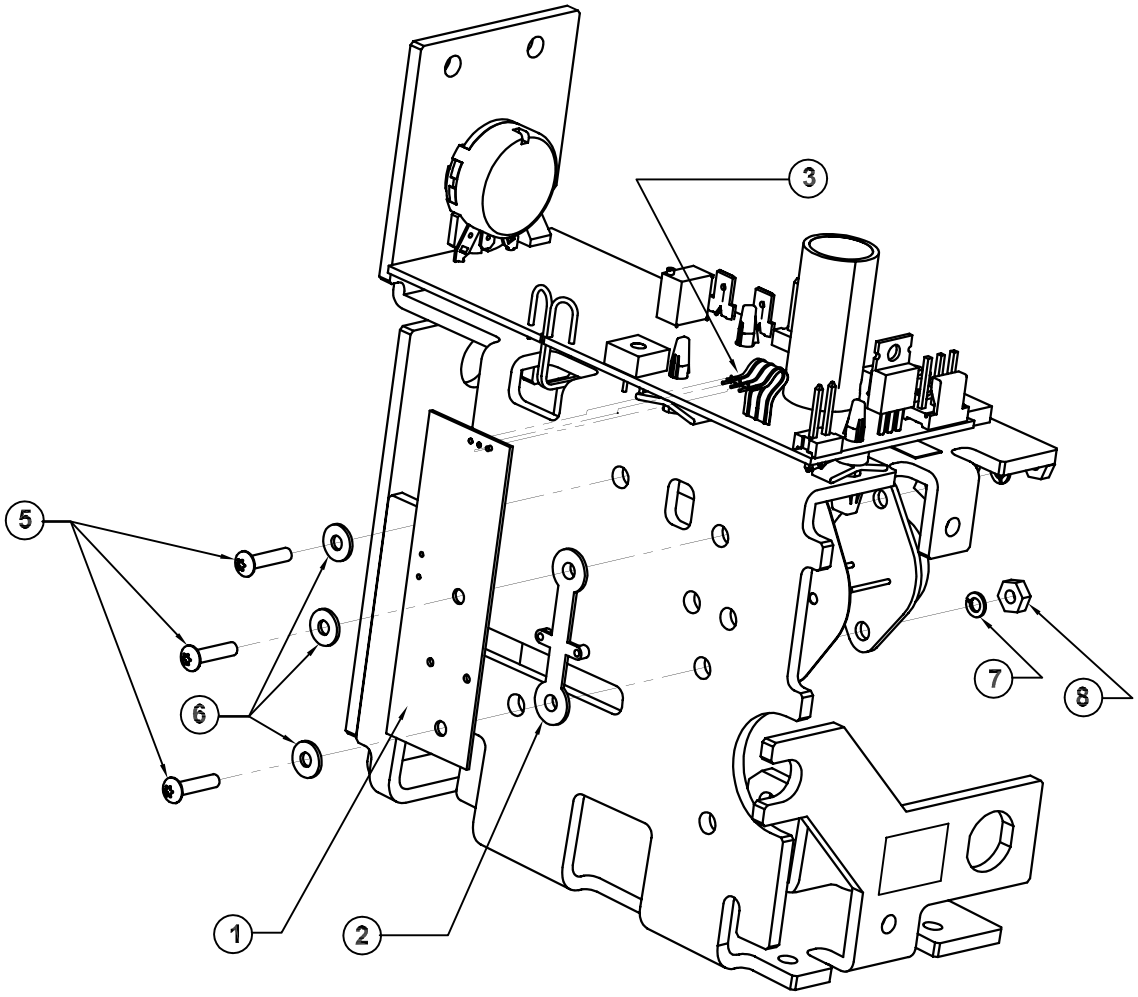
Oscillator PC Board Mount

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	81228	OSCILLATOR MODULE PC BOARD ASSEMBLY with thermistor
2	3	594081003	SUPPORT, LOCKING PC BOARD
3	1	574332001	BRIDGE RECTIFIER
4	1	81259	HARDWARE KIT: (for Darlington Transistor, Power Resistor and Bridge Rectifier)
5	4	See Above	SCREW, TORX, 4-40x1/2"
6	6	See Above	WASHER, FLAT #4
7	4	See Above	WASHER, SPLIT LOCK, #4
8	4	See Above	NUT, HEX 4-40



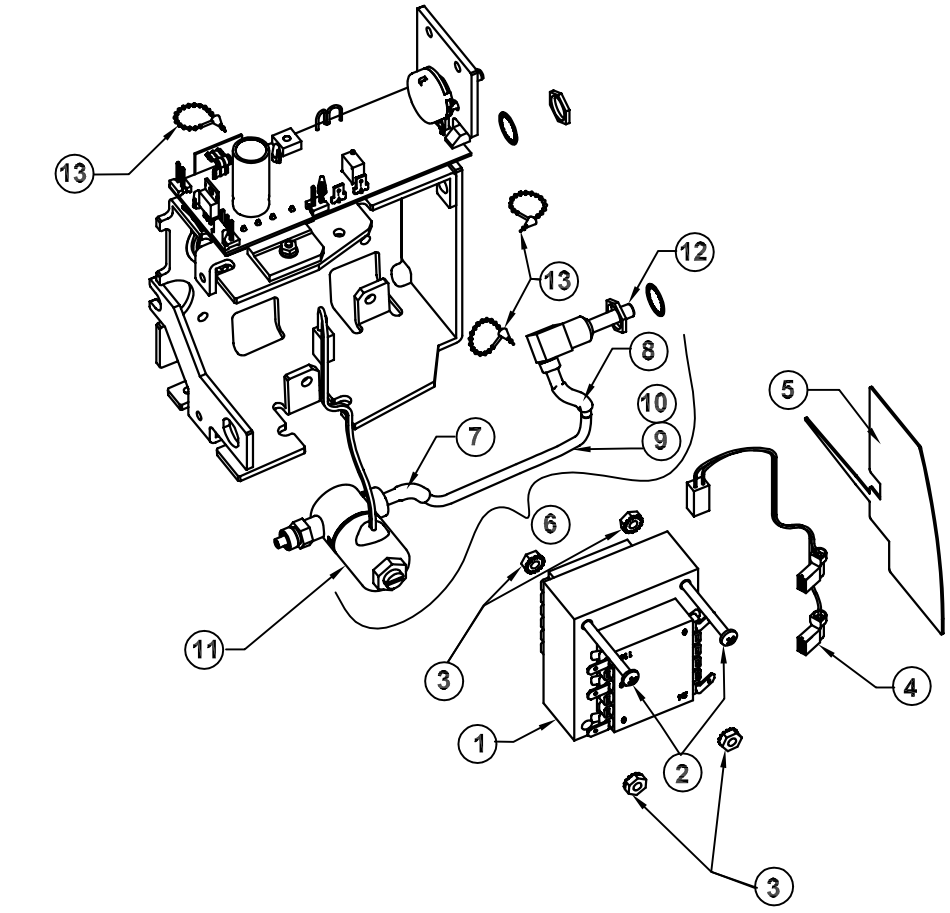
Darlington Mount

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	574335001	DARLINGTON TRANSISTOR
2	1	61350	SILPAD INSULATOR
3	1	574327001	POWER RESISTOR, 1/2 OHM, 5 %
4	1	81259	HARDWARE KIT: (for Darlington Transistor, Power Resistor and Bridge Rectifier)
5	4	See Above	SCREW, TORX, 4-40x1/2"
6	6	See Above	WASHER, FLAT #4
7	4	See Above	WASHER, SPLIT LOCK, #4
8	4	See Above	NUT, HEX 4-40



Darlington Mount (continued)

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	81231	PCB, DARLINGTON MOUNT
2	1	561028001	INSULATOR, POWER TRANSISTOR
3	5	554114001	JUMPER, FLEXIBLE
4	1	81259	HARDWARE KIT: (for Darlington Transistor, Power Resistor and Bridge Rectifier)
5	4	See Above	SCREW, TORX, 4-40x1/2"
6	6	See Above	WASHER, FLAT #4
7	4	See Above	WASHER, SPLIT LOCK, #4
8	4	See Above	NUT, HEX 4-40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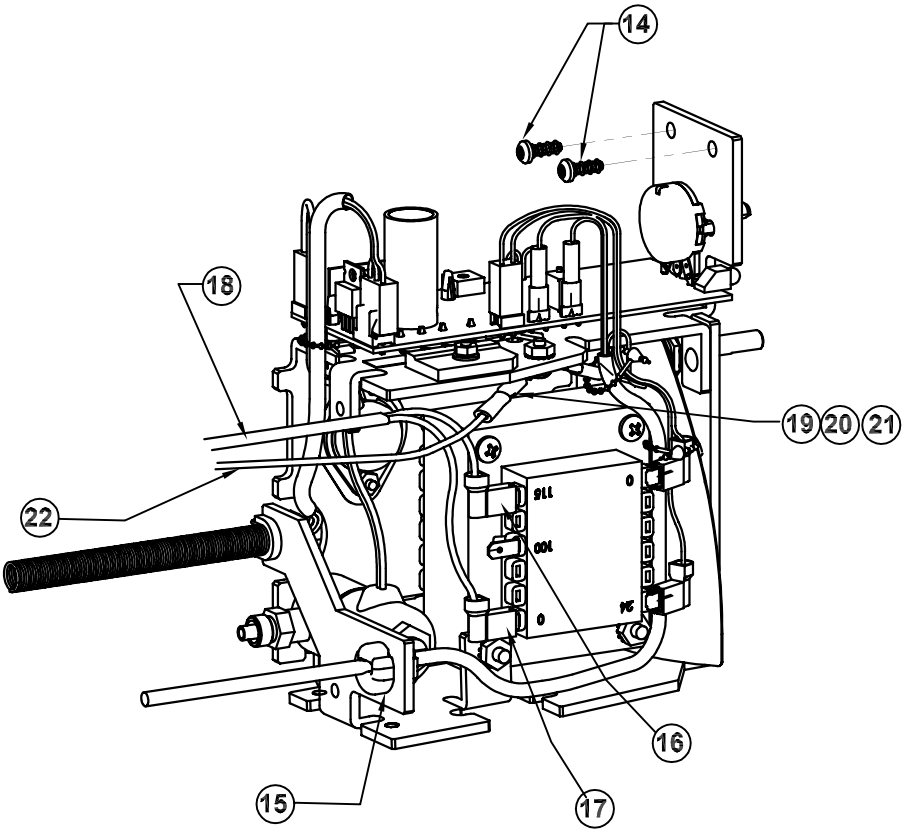
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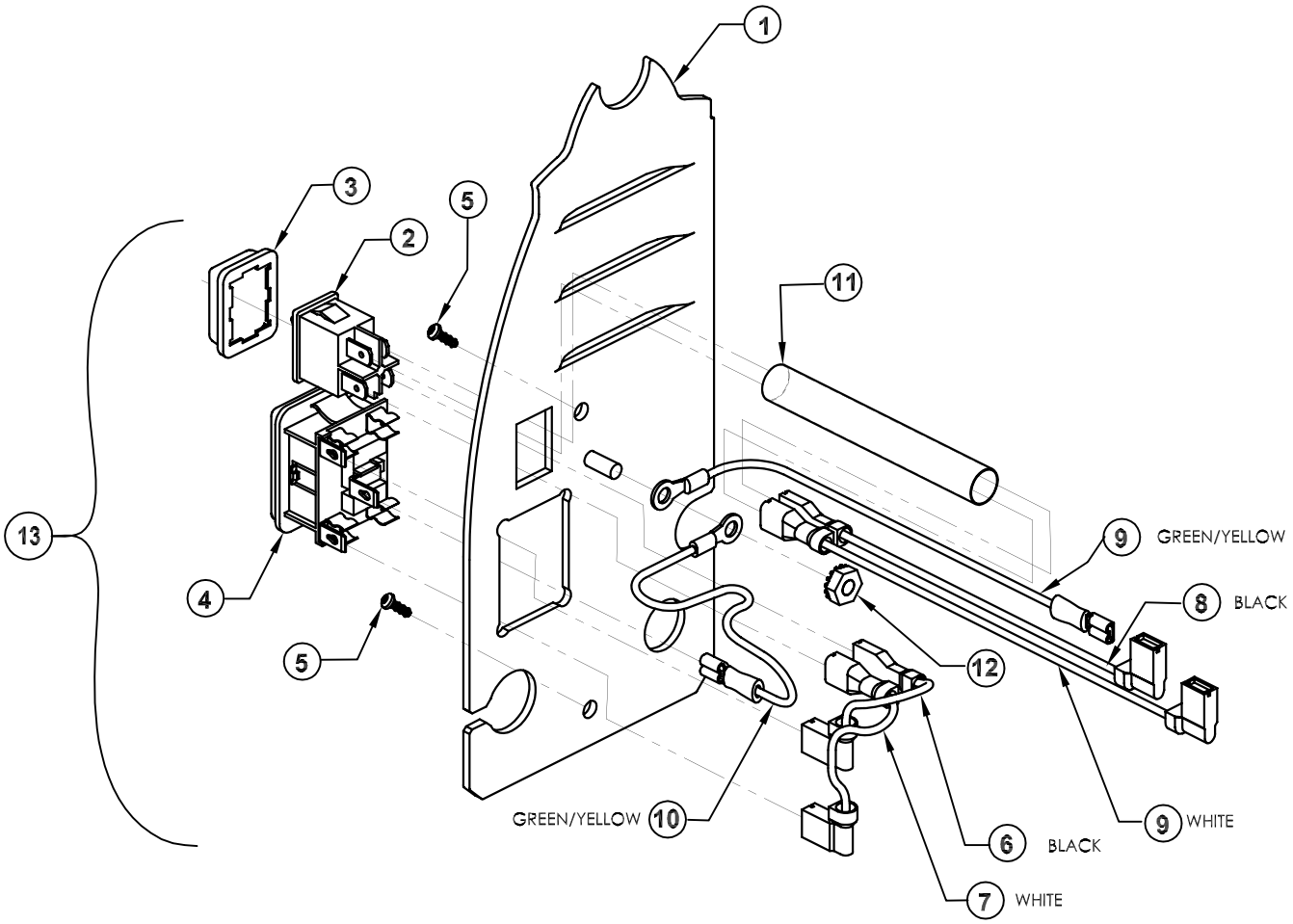
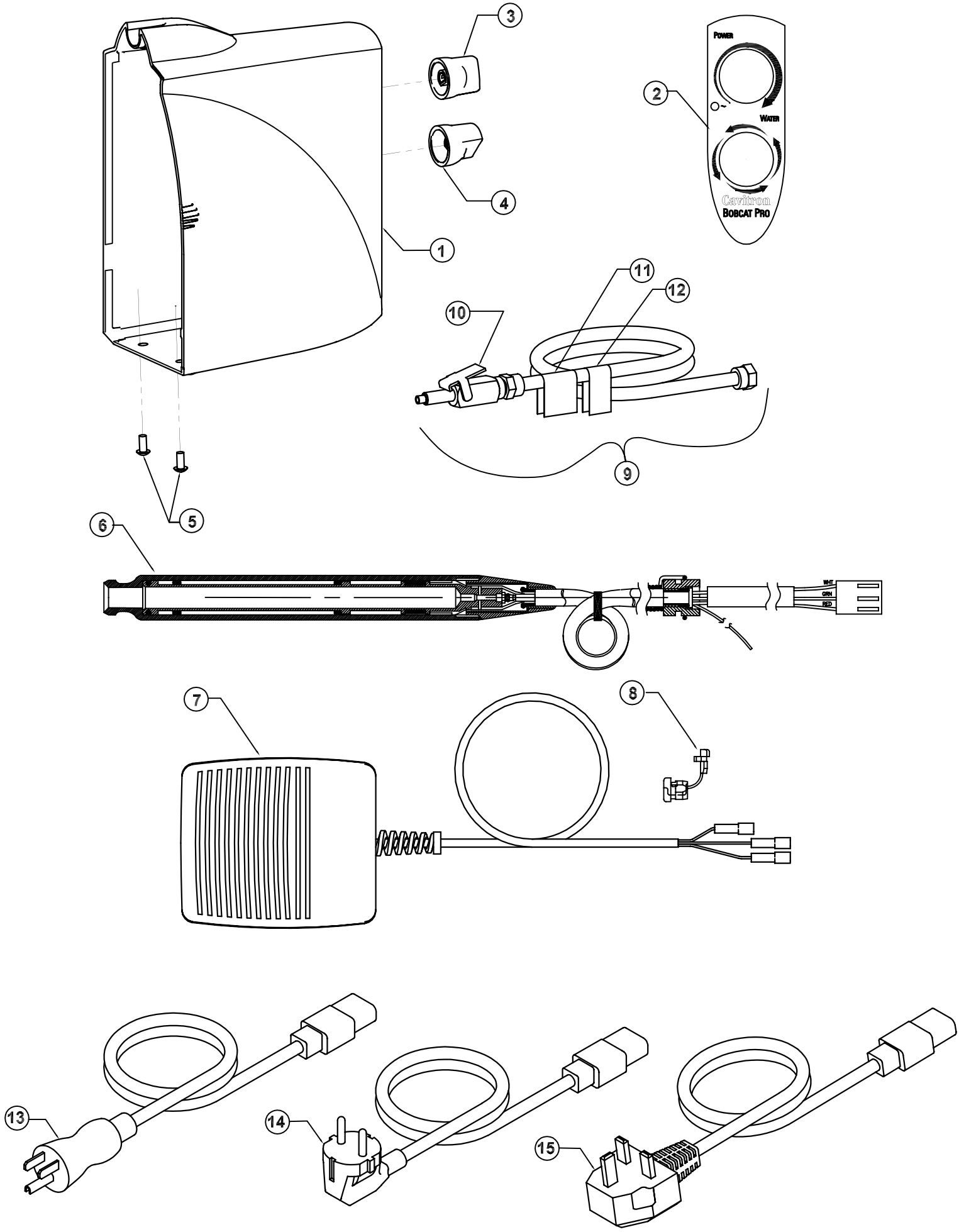
Transformer Mount & Lavage Assembly

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	60491	TRANSFORMER, 100/115 VOLTS
	1	60535	TRANSFORMER, 220/240 VOLTS
	1	570253001	TRANSFORMER, 200/230 VOLTS
2	4	42427	SCREWS, PHILIPS, 8-32x1.5"
3	4	587091001	NUT, KEPS, #8-32
4	1	77818	CABLE ASSY, SEC. TRANSFORMER
5	1	81248	BARRIER, PLASTIC
6	1	81225	LAVAGE ASSEMBLY
7	1 FT.	625076002	HEAT SHRINK, CLEAR, 1/2"x1.25"
8	1 FT.	625076001	HEAT SHRINK, CLEAR, 1/4"x1.25"
9	1 FT.	61282	TUBE, PUR., BLUE, 7.5"
10	1 FT.	62400	TUBING, PVC, BLACK
11	1	81258	SOLENOID, WATER ASSY.
12	1	81257	NEEDLE VALVE ASSY.
13	3	60366	NYLON CABLE TIE
14	2	586172003	SCREW, HI-LO, #8x1/2" TORX
15	1	562099001	STRAIN RELIEF, FOOTSWITCH CABLE
16	1	81244	WIRE ASSY., BLK-SW / TRANSFORMER
17	1	81245	WIRE ASSY., WHT-SW / TRANSFORMER
18	1 FT.	625076003	TUBING, HEAT SHRINK - 3"
19	1	569215001	FAST-ON TAB
20	1	60898	SCREW, #6, SEMS PH. PAN
21	1	587091002	NUT, KEPS, #6-32
22	1	80730	GND. WIRE ASSY., CHASSIS / B. PAN



Back Panel Components

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	81241	BACK PANEL
2	1	565179001	POWER SWITCH
3	1	565182001	COVER, POWER SWITCH
4	1	568270002	MODULE, POWER ENTRY
5	2	586159001	SCREW, BUTTON HEAD CAP,#8-32x3/8"
6	1	81242	WIRE ASSY, BLK-SW / PWR IN
7	1	81243	WIRE ASSY, WHT-SW / PWR IN
8	1	81244	WIRE ASSY, BLK-SW / TRANSFORMER
9	1	81245	WIRE ASSY, WHT - SW / TRANSFORMER
10	2	80730	WIRE ASSY, GND, GRN-YEL, WITH DISCONNECT
11	1 FT.	625076003	TUBING, HEATSHRINK - 3"
12	1	587091001	NUT, KEPS, #8-32
13		81213	BACK PANEL, COMPLETE


3
4
1
2
POWER
WATER
Cavitron
BOBCAT PRO
11
12
10
9
5
6
WHT
GRN
RED
7
8
13
14
15

Miscellaneous Parts

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	81227	CABINET, DECORATED (w/ Bumpers)
2	1	81235	LABEL, FRONT PANEL
3	1	81246	KNOB, POWER
4	1	81247	KNOB, WATER
5	2	586159001	SCREW, BUTTON HEAD CAP #8-32x3/8"
6	1	81214	HANDPIECE ASSEMBLY
	1	81234	SPRING, STRAIN RELIEF
7	1	565162004	FOOTSWITCH ASSEMBLY
8	1	562099001	STRAIN RELIEF, FOOTSWITCH
9	1	60388	WATER HOSE ASSEMBLY (Hose, Nut, and Labels)
10	1	79521	QUICK DISCONNECT (Domestic Only)
11	1	60276	WATER LABEL
12	1	60390	WATER CAUTION LABEL
13	1	554102003	POWER CORD (115V GEN130, Domestic, Export)
	1	77634	CAVITRON POWER CORD LABEL (Domestic Only)
14	1	78118	POWER CORD (220V GEN130B, 230V GEN130U, 240V GEN130A)
15	1	554109001	POWER CORD (UK, GEN130E)
	2	557034018	FUSE, 1.25A, 250V, Slow Blow
	2	60537	FUSE, 630mA, 250V, Slow Blow
	1	81238	MANUAL, DIRECTIONS FOR USE - Multilingual